FIG. 1

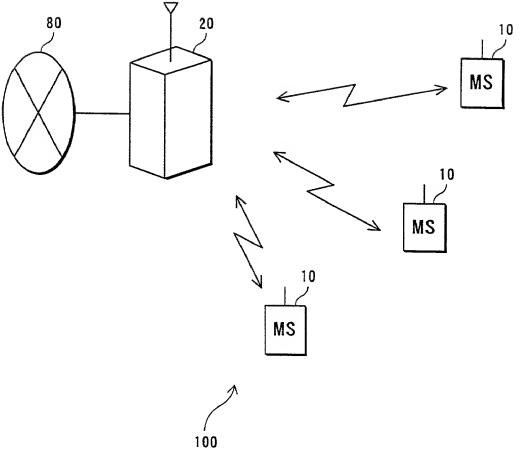

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FIG. 2

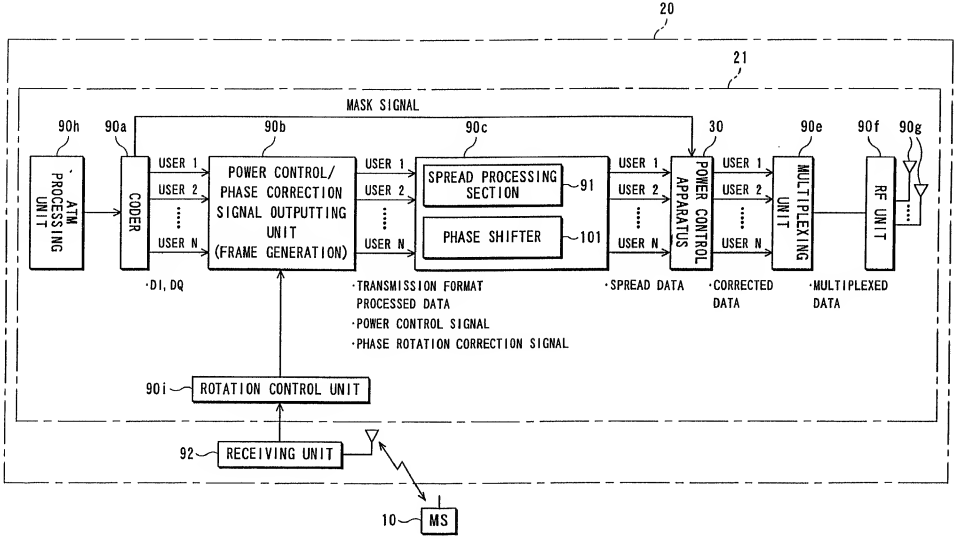

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FIG. 3

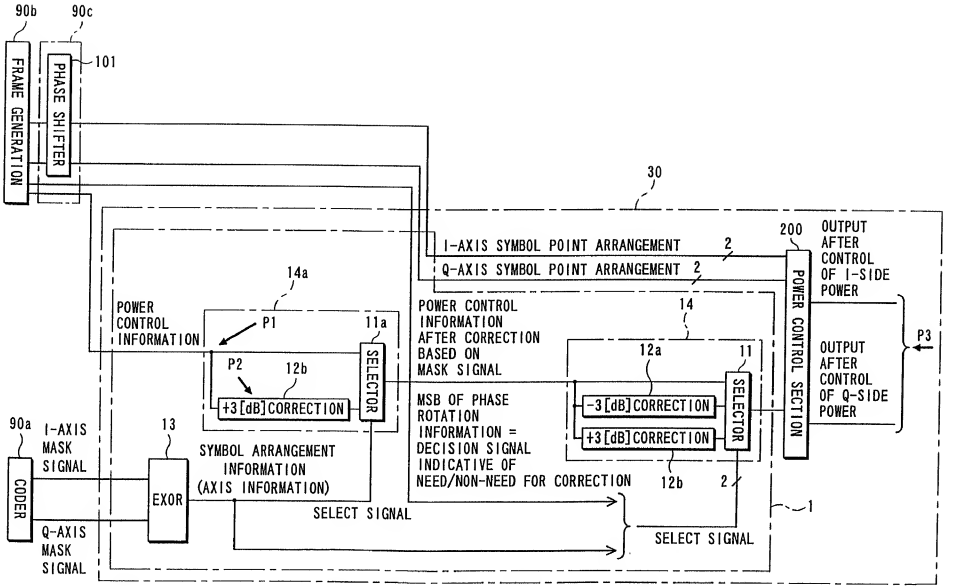


FIG. 4

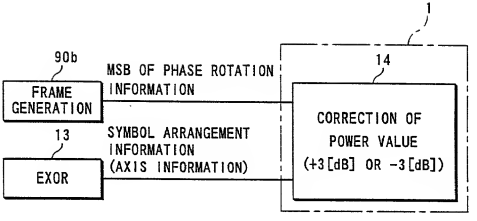

1
90b
FRAME GENERATION
MSB OF PHASE ROTATION INFORMATION
14
CORRECTION OF POWER VALUE (+3[dB] OR -3[dB])
13
EXOR
SYMBOL ARRANGEMENT INFORMATION (AXIS INFORMATION)

FIG. 5

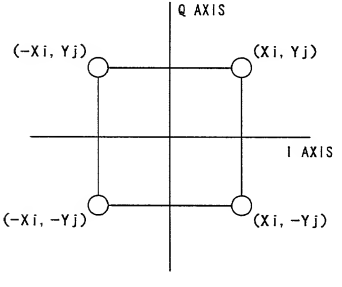

Q AXIS
(-Xi, Yj)
(Xi, Yj)
I AXIS
(-Xi, -Yj)
(Xi, -Yj)

FIG. 6

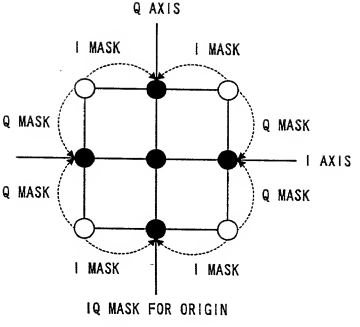

Q AXIS
I MASK
I MASK
Q MASK
Q MASK
I AXIS
Q MASK
Q MASK
I MASK
I MASK
IQ MASK FOR ORIGIN

FIG. 7A

PHASE ROTATION QUANTITY [DEGREE]	ALLOCATION BIT
0	000
90	001
180	010
270	011
45	100
135	101
225	110
315	111

FIG. 7B

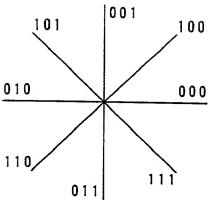
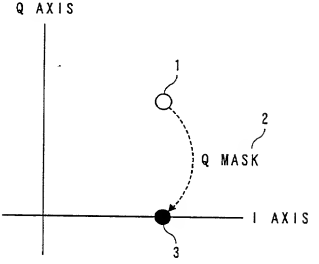


FIG. 8



TU2650 3270660

FIG. 9

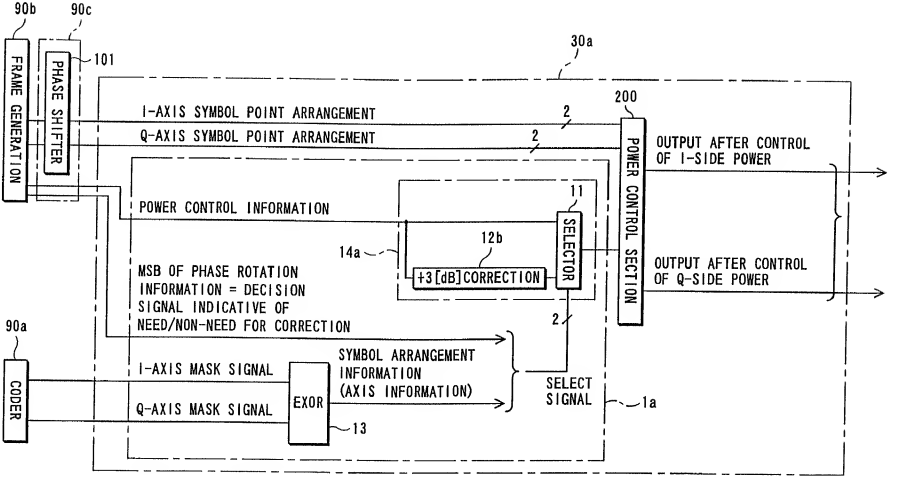


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FIG. 10

CASE	CORRECTION BASED ON NINE-POINT CONSTELLATION (= CORRECTION BASED ON MASK)		CORRECTION BASED ON PHASE ROTATION		TOTAL CORRECTION VALUE
	PRESENCE/ABSENCE OF MASK SIGNAL	CORECTION VALUE	CONDUCT/NON-CONDUCT OF CORRECTION	CORRECTION VALUE	
a	ABSENT (○)	0[dB]	NON-CONDUCTED	0[dB]	0[dB]
b	PRESENT(●)	+3[dB]	NON-CONDUCTED	0[dB]	+3[dB]
c	ABSENT (○)	0[dB]	CONDUCTED	+3[dB]	+3[dB]
d	PRESENT(●)	+3[dB]	CONDUCTED	-3[dB]	0[dB]

FIG. 11A

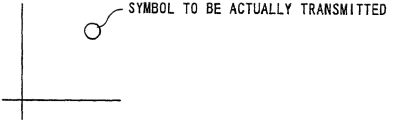


FIG. 11B

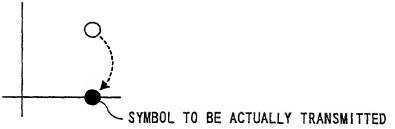


FIG. 11C

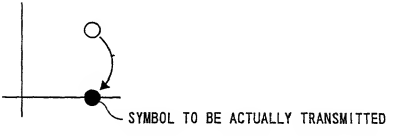
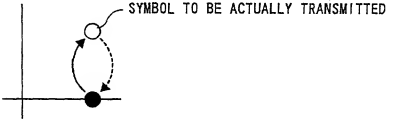


FIG. 11D



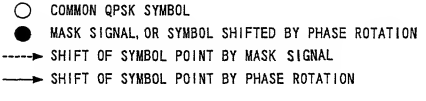


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FIG. 12

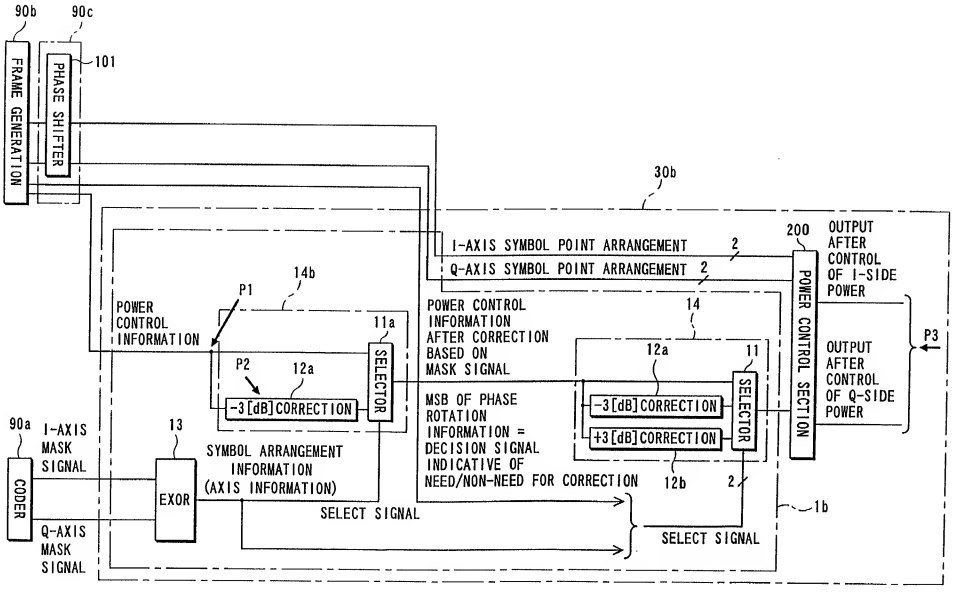

FIG. 13

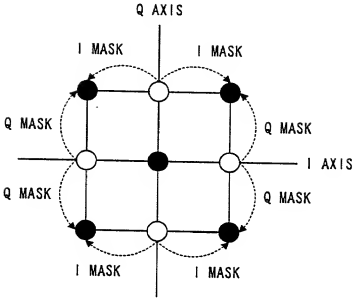
Q AXIS
I MASK
I MASK
Q MASK
Q MASK
I AXIS
Q MASK
Q MASK
I MASK
I MASK
IQ MASK FOR ORIGIN

FIG. 14

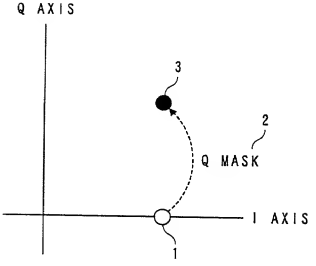
Q AXIS
3
2
Q MASK
I AXIS
1

FIG. 15

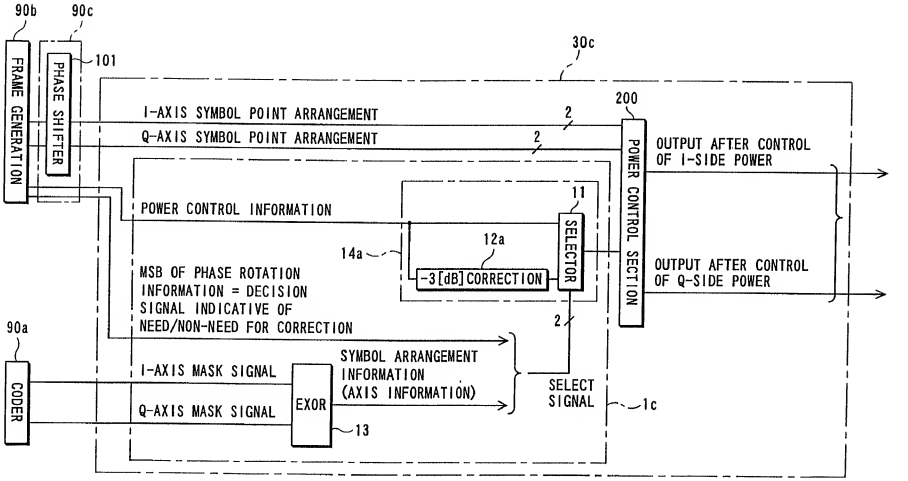
90b
90c
FRAME GENERATION
PHASE SHIFTER
101
30c
200
I-AXIS SYMBOL POINT ARRANGEMENT
Q-AXIS SYMBOL POINT ARRANGEMENT
2
2
POWER CONTROL SECTION
OUTPUT AFTER CONTROL OF I-SIDE POWER
OUTPUT AFTER CONTROL OF Q-SIDE POWER
POWER CONTROL INFORMATION
11
SELECTOR
12a
14a
-3[dB]CORRECTION
MSB OF PHASE ROTATION INFORMATION = DECISION SIGNAL INDICATIVE OF NEED/NON-NEED FOR CORRECTION
2
90a
CODER
I-AXIS MASK SIGNAL
Q-AXIS MASK SIGNAL
EXOR
13
SYMBOL ARRANGEMENT INFORMATION (AXIS INFORMATION)
SELECT SIGNAL
1c

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FIG. 16

CASE	CORRECTION BASED ON NINE-POINT CONSTELLATION (= CORRECTION BASED ON MASK)		CORRECTION BASED ON PHASE ROTATION		TOTAL CORRECTION VALUE
	PRESENCE/ABSENCE OF MASK SIGNAL	CORECTION VALUE	CONDUCT/NON-CONDUCT OF CORRECTION	CORRECTION VALUE	
a	ABSENT (○)	0[dB]	NON-CONDUCTED	0[dB]	0[dB]
b	PRESENT(●)	-3[dB]	NON-CONDUCTED	0[dB]	-3[dB]
c	ABSENT (○)	0[dB]	CONDUCTED	-3[dB]	-3[dB]
d	PRESENT(●)	-3[dB]	CONDUCTED	+3[dB]	0[dB]

FIG. 17A

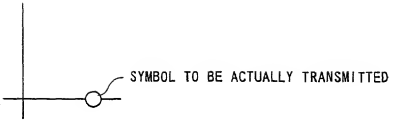


FIG. 17B

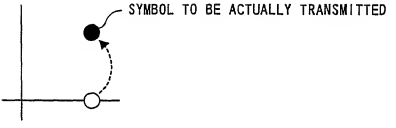


FIG. 17C

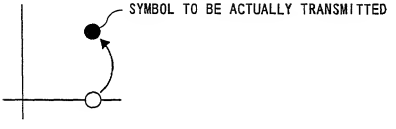
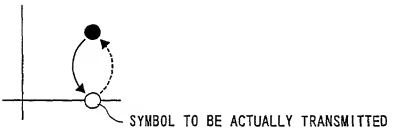


FIG. 17D



○ COMMON QPSK SYMBOL

● MASK SIGNAL, OR SYMBOL SHIFTED BY PHASE ROTATION

----→ SHIFT OF SYMBOL POINT BY MASK SIGNAL

——→ SHIFT OF SYMBOL POINT BY PHASE ROTATION

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FIG. 18

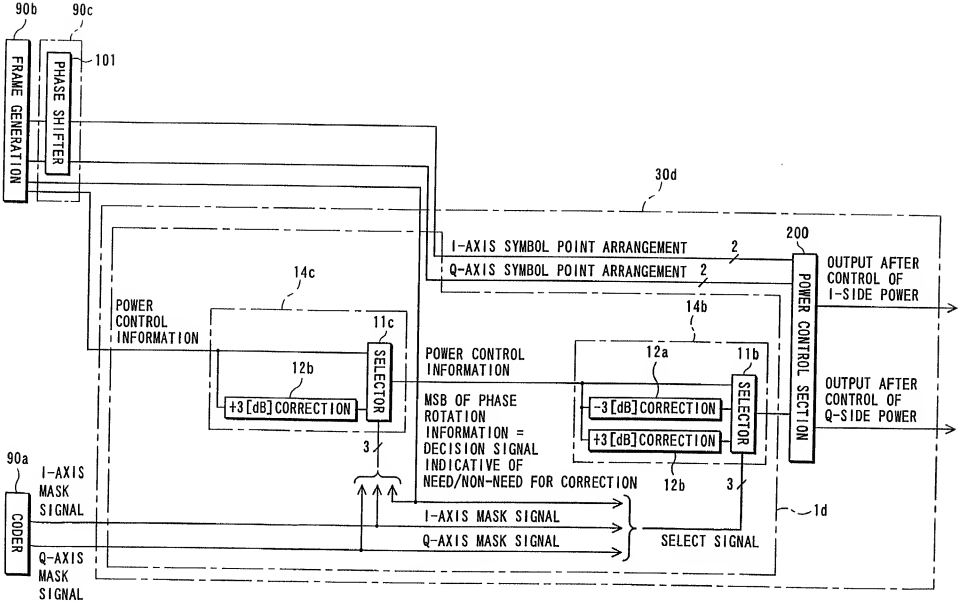

FIG. 19

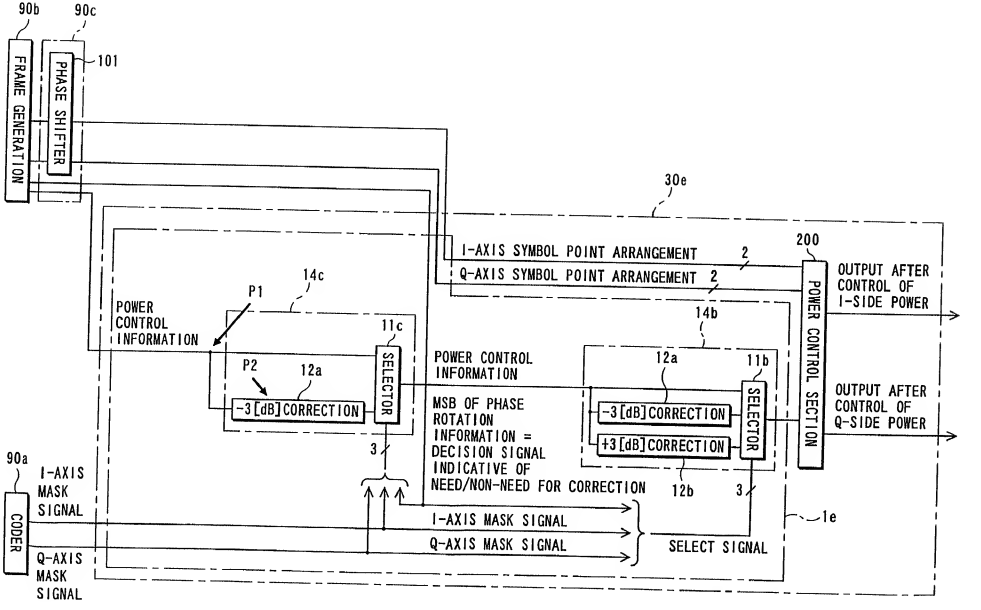
90b
90c
FRAME GENERATION
PHASE SHIFTER
101
30e
I-AXIS SYMBOL POINT ARRANGEMENT
2
Q-AXIS SYMBOL POINT ARRANGEMENT
2
200
POWER CONTROL SECTION
OUTPUT AFTER CONTROL OF I-SIDE POWER
OUTPUT AFTER CONTROL OF Q-SIDE POWER
POWER CONTROL INFORMATION
P1
14c
11c
SELECTOR
P2
12a
-3[dB]CORRECTION
14b
12a
11b
SELECTOR
-3[dB]CORRECTION
+3[dB]CORRECTION
12b
3
MSB OF PHASE ROTATION INFORMATION = DECISION SIGNAL INDICATIVE OF NEED/NON-NEED FOR CORRECTION
I-AXIS MASK SIGNAL
Q-AXIS MASK SIGNAL
SELECT SIGNAL
1e
90a
CODER
I-AXIS MASK SIGNAL
Q-AXIS MASK SIGNAL

FIG. 20

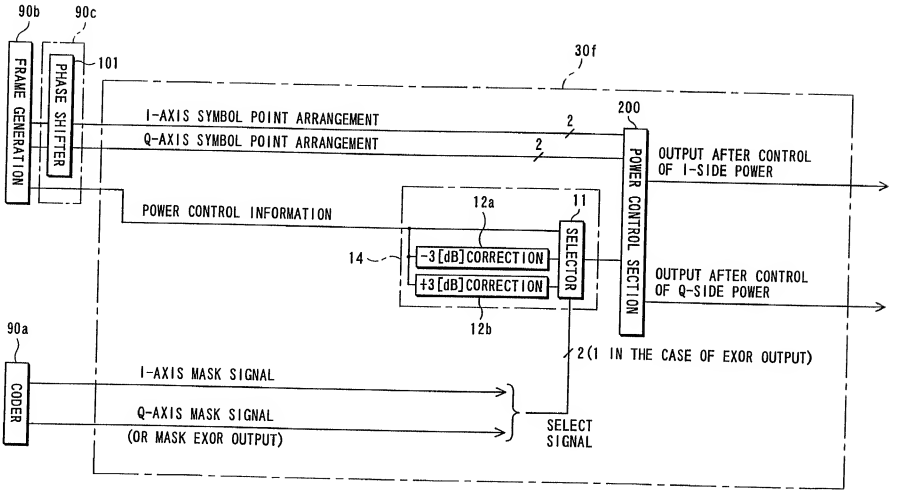
90b
90c
FRAME GENERATION
PHASE SHIFTER
101
30f
200
I-AXIS SYMBOL POINT ARRANGEMENT
Q-AXIS SYMBOL POINT ARRANGEMENT
2
2
POWER CONTROL SECTION
OUTPUT AFTER CONTROL OF I-SIDE POWER
POWER CONTROL INFORMATION
12a
11
14
-3[dB]CORRECTION
+3[dB]CORRECTION
SELECTOR
OUTPUT AFTER CONTROL OF Q-SIDE POWER
12b
90a
2(1 IN THE CASE OF EXOR OUTPUT)
CODER
I-AXIS MASK SIGNAL
Q-AXIS MASK SIGNAL
(OR MASK EXOR OUTPUT)
SELECT SIGNAL

FIG. 21

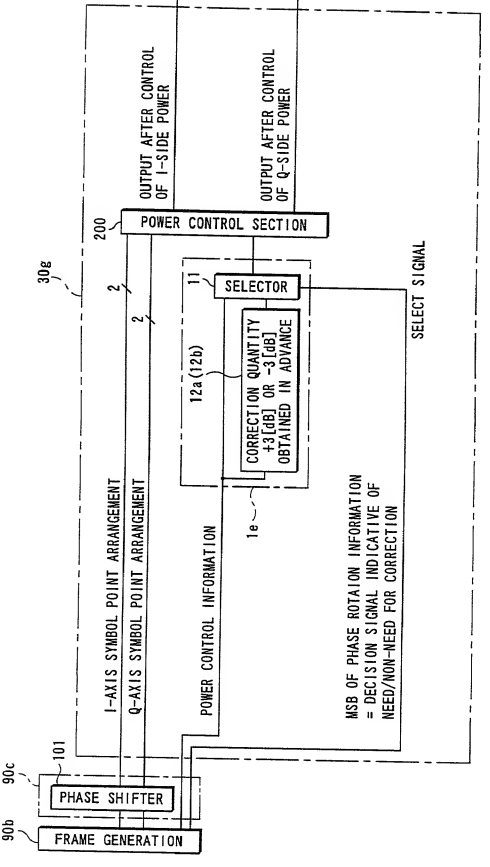
90b
FRAME GENERATION
90c
PHASE SHIFTER
101
30g
I-AXIS SYMBOL POINT ARRANGEMENT
Q-AXIS SYMBOL POINT ARRANGEMENT
2
2
200
POWER CONTROL SECTION
OUTPUT AFTER CONTROL OF I-SIDE POWER
OUTPUT AFTER CONTROL OF Q-SIDE POWER
11
SELECTOR
12a (12b)
CORRECTION QUANTITY +3[dB] OR -3[dB] OBTAINED IN ADVANCE
POWER CONTROL INFORMATION
1e
SELECT SIGNAL
MSB OF PHASE ROTAION INFORMATION
= DECISION SIGNAL INDICATIVE OF
NEED/NON-NEED FOR CORRECTION

FIG. 22

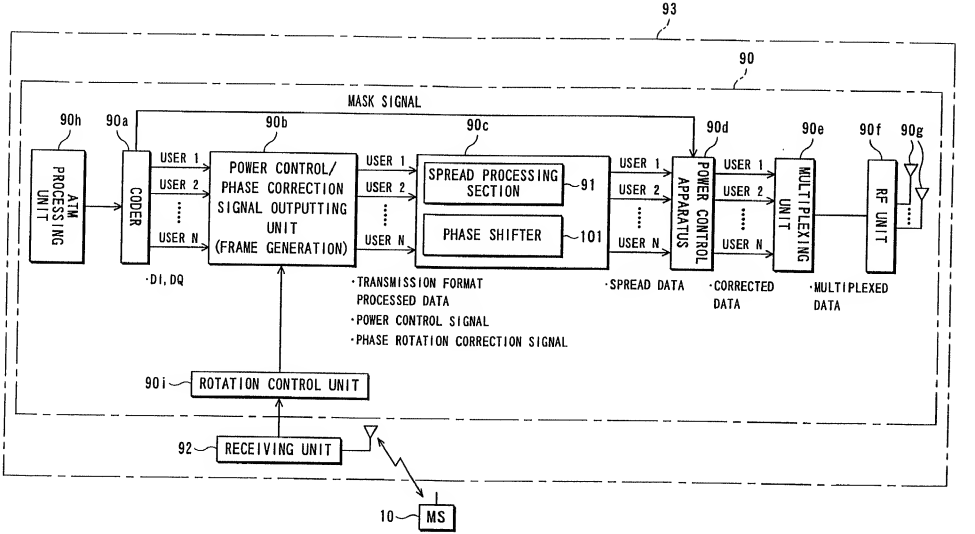
93
90
MASK SIGNAL
90h
90a
90b
90c
90d
90e
90f
90g
ATM PROCESSING UNIT
CODER
USER 1
USER 2
USER N
POWER CONTROL/ PHASE CORRECTION SIGNAL OUTPUTTING UNIT (FRAME GENERATION)
SPREAD PROCESSING SECTION
91
PHASE SHIFTER
101
POWER CONTROL APPARATUS
MULTIPLEXING UNIT
RF UNIT
·DI, DQ
·TRANSMISSION FORMAT PROCESSED DATA
·POWER CONTROL SIGNAL
·PHASE ROTATION CORRECTION SIGNAL
·SPREAD DATA
·CORRECTED DATA
·MULTIPLEXED DATA
90i
ROTATION CONTROL UNIT
92
RECEIVING UNIT
10
MS

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FIG. 23

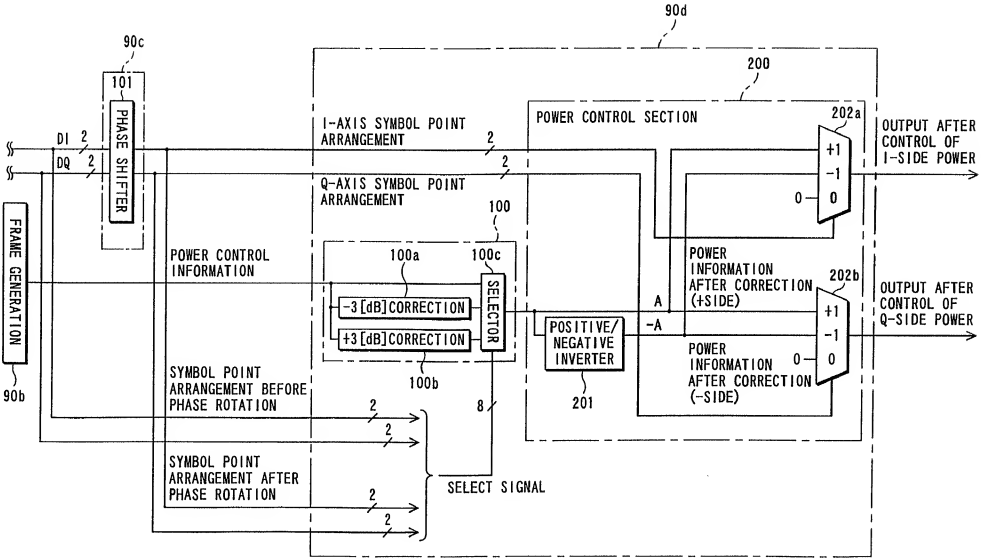

FIG. 24

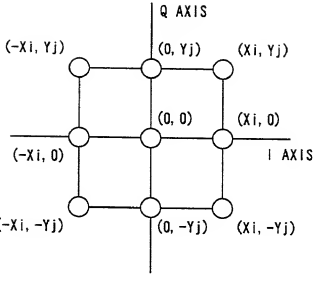

FIG. 25A

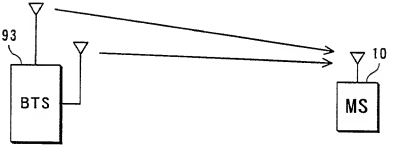

FIG. 25B

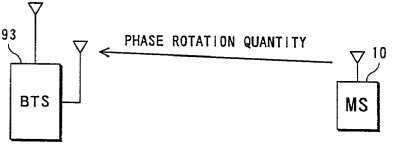

FIG. 26

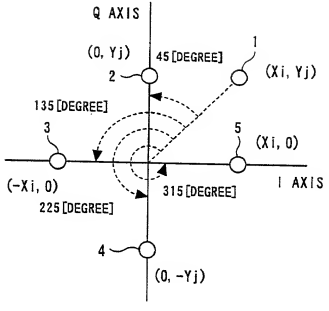
Q AXIS
(0, Yj)
45 [DEGREE]
1
(Xi, Yj)
2
135 [DEGREE]
3
5
(Xi, 0)
(-Xi, 0)
315 [DEGREE]
I AXIS
225 [DEGREE]
4
(0, -Yj)

FIG. 27

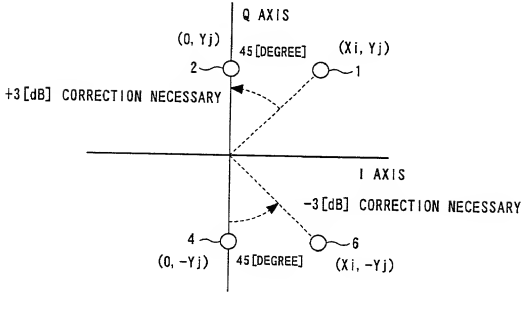
Q AXIS
(0, Yj)
45 [DEGREE]
(Xi, Yj)
2
1
+3 [dB] CORRECTION NECESSARY
I AXIS
-3 [dB] CORRECTION NECESSARY
4
6
(0, -Yj)
45 [DEGREE]
(Xi, -Yj)

FIG. 28

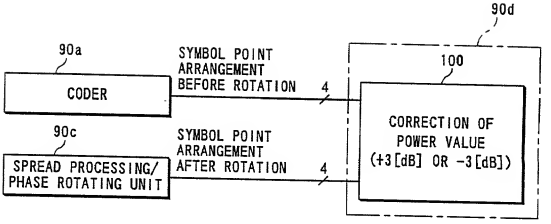

FIG. 29A

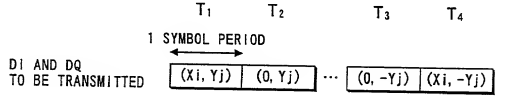

FIG. 29B

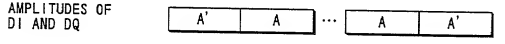
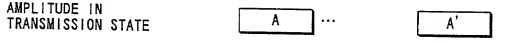
FIG. 29C